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(51) INT CL<sup>7</sup>  
**A46B 11/02**

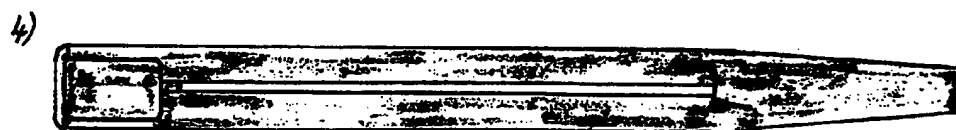
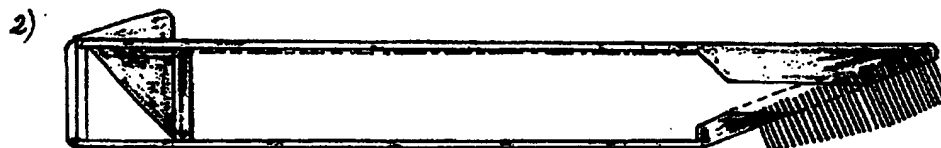
(52) UK CL (Edition S )  
**A4K KBA K155 K158 K161 K175**  
**U1S S1125**

(56) Documents Cited  
**GB 0853780 A DE 029815277 U DE 004429032 A1**  
**FR 002734132 A1 FR 002623699 A1 US 5746532 A**

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**UK CL (Edition S ) A4K KBA**  
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**Online databases: EPODOC; WPI; JAPIO**

(54) Abstract Title  
**Reservoir toothbrush**

(57) A toothbrush incorporating a supply of paste comprises an internal plunger connected to a button mounted to slide along a slot in the top of the handle. The slot is initially sealed by a membrane, which is either integrally moulded or separately installed; the membrane is cut by a blade on the button as the button is advanced. The brush can be protected with a plastics cap. Toothpaste could be provided in cartridges.



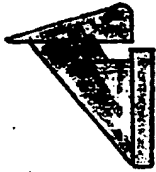
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ALL IN ONE TOOTHBRUSH & TOOTHPASTE

1a)



1b)



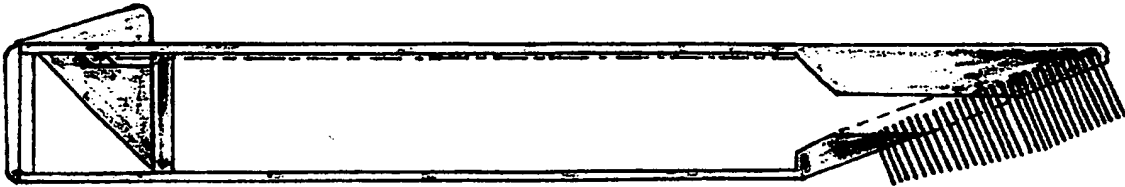
1c)



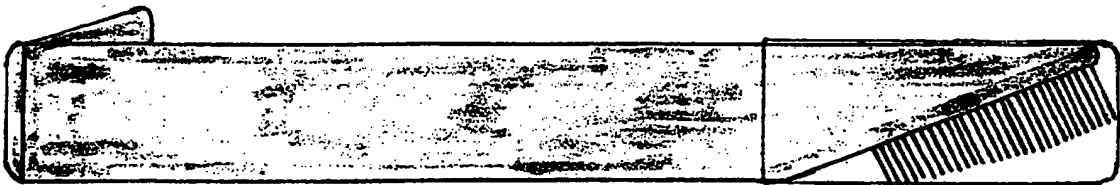
1d)



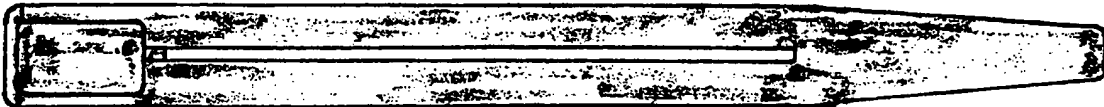
2)



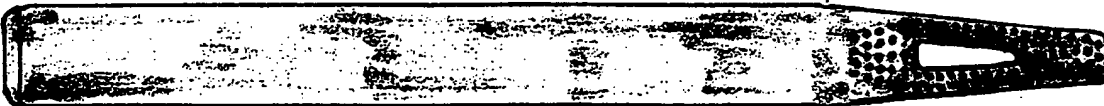
3)



4)



5)



**ALL IN ONE TOOTHBRUSH AND TOOTHPASTE**

This product is primarily designed for the traveller, or nights away from home. Although some people might prefer it to a conventional toothbrush as it would be slightly quicker to use.

To contain the toothpaste in the tube. A seal where the plunger runs in the slot should be made as part of the injection moulding process, providing the plastic could be made thin enough so the cutting edge on the plunger is able to cut through it. Otherwise, a separate plastic seal would have to be introduced to the underside of the slot.

Figure 1a. Shows the end cap, which would be glued into position after the toothbrush is filled and assembled.

Figure 1b. Showing a side elevation of the plunger, illustrating the cutting edge on the underside of the push button.

Figure 1c. Shows the end elevation, looking from the front.

Figure 1d. Shows the construction of the plunger looking from the back.

Figure 2. Displays the cross section of the toothbrush, showing the plastic strip/seal on the underside of the slot. In the event, the seal cannot be established at the same time as the manufacture of the main body of the toothbrush.  
Another possibility, would be to introduce a sealing compound into the slot, prior to the brush being filled and assembled.

Figure 3. Shows another side elevation of the brush, with a plastic cap in place to keep the toothpaste fresh and to protect the brush.

Figure 4. Shows the top elevation of the toothbrush.

Figure 5. Shows the elevation from underneath.

The toothbrush could be slightly redesigned so the brush could accept cartridges of toothpastes.

## CLAIMS

1. The all in one toothbrush and toothpaste, is a toothbrush dispensing its own supply of toothpaste from the body of the toothbrush.
2. The toothbrush as claimed in claim 1 deliver an amount of toothpaste to the brush head by means of a thumb operated sliding plunger , contained within the handle of the toothbrush.
3. The toothbrush as claimed in claim 1 and 2, that the toothpaste is pushed towards the brush head by a plunger activated by the thumb of the user, and the toothpaste exits through a hole in the brush head. The slot in which the slider travels is sealed until it is cut by the cutting edge situated between the button and plunger.
4. The toothbrush as claimed in claims 2& 3, that the toothbrush adopts a plunger system for dispensing the toothpaste. To stop any leakage of toothpaste, the cutting edge, set under the dispensing button, is set back approximately 7mm. from the plunger face, so the plunger creates its own seal when the dispensing button is pushed, which in turn, cuts the membrane of plastic situated in the slot at the top of the toothbrush handle
5. The toothbrush as claimed in claim 4, adopts a push button (figure 1b) on top of the toothbrush handle. This design incorporates three functions.
  - a)- To cut the thin membrane of plastic.
  - b)- To propel the toothpaste towards the brush head.
  - c)- To seal the handle against leaks.
6. The all in one toothbrush and paste as claimed in any proceeding claim is made of plastics.
7. An all in one toothbrush and paste substantially as here in described and illustrated in the accompanying drawing.

Amended claims have been filed as follows

1. The all in one toothbrush and paste, is a toothbrush with its own built in supply of toothpaste contained within the body of the toothbrush.
2. The toothbrush as claimed in claim 1, delivers the toothpaste to the brush head by means of a plunger situated on top of the body of the toothbrush.
3. The toothbrush as claimed in claims 1 and 2, that the toothbrush adopts a plunger system activated by the thumb, pushing the toothpaste towards the brush head and exiting between the bristles.
4. As claimed in claims 2 and 3, that the toothbrush adopts a plunger system to deliver the toothpaste. To stop any leakage from the top of the handle, the cutting edge, situated underneath the slider button is set slightly back from the plunger face, as illustrated in the original drawing (fig. 1b).  
As the slider is pushed forward, it cuts the seal in the slot on top of the toothbrush handle. The sealant is possibly some form of silicone plastic.
5. The specific design of the toothbrush, is very much geared towards ease of manufacture and assembly, consisting of 3 injection moulded components, with bristles and seal to follow.
6. The brush head is angled to keep the toothbrush to a suitable length, and to maximize the toothpaste holding capabilities. It is also a good shape to reach the molars at the back of the mouth. Aesthetically, the shape of the brush head compliments the general design of the toothbrush.
7. The 'All in one toothbrush and paste' as claimed in any proceeding claim is made of plastics.
8. An All in one toothbrush and paste' substantially as here in described and illustrated in the accompanying drawing.



**Application No:** GB 0004985.8  
**Claims searched:** 1-7

**Examiner:** Brian B Caswell  
**Date of search:** 26 February 2001

## **Patents Act 1977**

### **Search Report under Section 17**

#### **Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): A4K (KBA)

Int Cl (Ed.7): A46B

Other: Online databases: WPI; EPODOC; JAPIO

#### **Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 853780 (PEYRON)	1,2
X	US 5746532 (MEGILL)	1
X	DE 4429032 A1 (ZEMBRUSKI)	1-6
X	DE 29815277 U1 (JAKAB)	1-6
X	FR 2734132 A1 (ROSSIGNOL)	1,2
X	FR 2623699 A1 (CHAMBIRON)	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.